

REMARKS

Claims 2-26 are pending in the present application. Claims 11-14 and 19-25 have been withdrawn as being directed to non-elected inventions. Claim 1 has been cancelled. Claim 26 has been added. Claims 2-10 and 15-18 have been amended. The specification has been amended to correct minor errors. FIGS. 2 and 3 of the drawings have been amended to include a feature of the invention described in the specification but not previously shown. Applicants retain the right to prosecute the withdrawn claims in one or more divisional applications.

Applicants respectfully request reconsideration of the application in view of the foregoing amendments and the remarks appearing below.

Affirmation of Election

Applicants affirm the election of the claims of Group 1, claims 1-10 and 15-18, for immediate prosecution, made during a telephone conversation with Mr. Lawrence H. Meier on December 13, 2001.

Objection to Drawings

The Examiner has objected to the drawings as failing to comply with 37 CFR § 1.84(p)(4) because reference character "28" has been used to designate both the inlet and substrates of the CVD abatement apparatus 20. Applicants respectfully disagree.

Referring to FIG. 2 of the drawings, this drawing clearly shows the inlet of abatement apparatus 20 as being element numeral 28 and the substrates as being element numeral 32. The error causing the confusion is in the specification on page 7, line 16, where a typographical error indicates "substrate 28" rather than "substrate 32." This typographical error is addressed below with respect to the objection to the specification. Applicants submit that the drawings are correct and, therefore, respectfully request that the examiner withdraw the present objection.

Objection to Specification

The Examiner has objected to the specification because of an error on page 7, line 16 wherein the numeral "28" should be "32," and because the information "BTV/Patent Application.wpd" should not be present.

Applicants have changed the numeral "28" to "32" on page 7, line 16 and have stricken the information "BTV/Patent Application.wpd" from page 16, line 15. Therefore, Applicants respectfully request that the Examiner withdraw the present objection.

Proposed Drawing Amendment

In view of the indefinite rejection of claim 8, discussed in the following section, Applicants propose to amend FIGS. 2 and 3 to include the heating element recited in this claim and mentioned at page 8, lines 1-4 of the specification as shown on the attached drawing sheet. The heating element is shown as a new element numeral 35 on the attached sheet. Once the Examiner has approved this change, Applicants will amend the specification at page 8, line 3 to recite "heater 35," in place of "heater (not shown)."

Rejections Under 35 U.S.C. § 112, Second Paragraph

The Examiner has rejected claims 1-12 and 15-18 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter Applicants regard as their invention.

In particular, regarding claim 1, the Examiner states that it is unclear as to what structural limitations is implied by the term "CVD chamber" and to what the word "each" in line 6 refers. Applicants have cancelled claim 1. Therefore, the present rejection is moot.

Regarding claim 8, the Examiner states that the heating element of this claim is not shown in the drawings. In this connection, Applicants propose to amend FIG. 3 of the drawings to show a heating element. If the Examiner accepts this amendment, the present rejection will be moot.

Regarding claim 9, the Examiner states that the language of the claim is directed to a method limitation that renders it unclear as to which structural limitation is being recited.

Applicants respectfully disagree. Claim 9 requires that the at least one substrate be removable and reusable. This requires that the substrate and the second chamber have certain structural properties that allow the substrate to be removed and reused. For example, if the substrate were integrally attached within the second chamber, it would not be removable and reusable, since the substrate would have to be broken free in order to remove it. However, if the substrate were held in place within the chamber by clips or other holding structures, the

substrate would be removable. In addition, to be reusable, the substrate must be robust enough to withstand the removal of the previously deposited film. These are structural limitations.

In addition, the Examiner states that in claim 9, line 1, the phrase "the chemical component" lacks antecedent basis since it is merely recited in an intended-use clause. Since this phrase does not appear in claim 9, but rather in claim 10, Applicants infer that this rejection is directed to claim 10. If this is so, Applicants respectfully disagree. The at least one chemical component recited in amended claim 10 finds its antecedent basis in the preamble of new claim 26 from which claim 10 now depends. In addition, this limitation does indeed recite a structural limitation of the claims. This is so because claim 26 states that the second chamber is "adapted for chemical vapor deposition of the at least one chemical component of the exhaust gas." When the at least one component of the exhaust gas is silicon, this means that the second chamber must be adapted for chemical vapor deposition of silicon, which, as those skilled in the art know, is achieved only under certain parameters that are well-known in the art. Since reciting a particular chemical component, i.e., silicon, places structural limitation on the second chamber, Applicants believe the present rejection is not proper.

Regarding claim 15, the Examiner states with respect to lines 4-5 and 8-9 that it is unclear as to what structural limitations applicant is attempting to recite concerning the elements used to remove a portion of the exhaust gas. Applicants respectfully disagree. Claim 15, as amended, requires a process chamber, a first apparatus adapted for removing a non-toxic part of an exhaust gas by chemical vapor deposition and a second apparatus adapted for removing a toxic part of the exhaust gas. The "adapted for..." language with respect to the first and second apparatuses imparts structural limitations to these apparatuses. Those skilled in the art will readily understand the structures needed to provide these apparatuses, since they are well-known in the art. Accordingly, no further recitation of structure is necessary. Since reciting that the first and second apparatuses are "adapted for" particular purposes imparts structural limitation that would be readily understood by those skilled in the art, Applicants believe the present rejection is not proper.

Regarding claims 17 and 18, the Examiner states that the phrases "the non-toxic part" and "the toxic part" in the respective claims lack antecedent basis and do not limit the claims. Applicants respectfully disagree. First, these phrases find their antecedent bases in the preamble of claim 15. Second, similar to claim 15 discussed above, reciting that the non-toxic part of the

exhaust gas comprises silicon and the toxic part of the exhaust gas comprises arsine impart specific structural limitations on the first and second apparatuses of amended claim 15. Only certain apparatuses are adapted for removing silicon and arsine. Those skilled in the art would readily understand what these structures are. Accordingly, reciting particular materials for the non-toxic and toxic parts of the exhaust gas even though the non-toxic and toxic parts are first recited in the preamble of claim 15 placed specific structural requirements on the first and second apparatuses recited in the body of amended claim 15. Therefore, Applicants believe that the present rejection is improper.

For at least the foregoing reasons, Applicants respectfully request that the Examiner withdraw the present indefiniteness rejections of claims 1-10 and 15-18.

Rejections Under 35 U.S.C. § 102

The Examiner has rejected claims 1, 3, 5, 7, 10, and 15-18 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,271,908 to Shibana et al., stating Shibana et al. disclose all the elements of these claims. Applicants respectfully disagree.

Shibana et al. disclose an apparatus for neutralizing pyrophoric gas that is created by a process, such as chemical vapor deposition. The apparatus includes a neutralization chamber 10 wherein the pyrophoric gas is mixed with a quantity of air sufficient to neutralize the pyrophoric gas. The chamber contains baffles 14 for creating the turbulence needed to mix the air and pyrophoric gas together. When the pyrophoric gas contains a silane, its neutralization creates silicon dioxide in the form of a brownish dust or sand. The apparatus is constructed of sheet metal.

Amended independent claim 26, on the other hand requires as limitations a second chamber adapted for chemical vapor deposition of at least one chemical component of an exhaust gas and at least one substrate for receiving a film by chemical vapor deposition. Clearly, the Shibana et al. apparatus is not "adapted for chemical vapor deposition" and does not include at least one substrate for receiving a film by chemical vapor deposition. Rather, the Shibana et al. apparatus is a mixing chamber for mixing gases with one another. In addition, the Shibana et al. apparatus cannot reasonably be said to be adapted for chemical vapor deposition. The material from which it is made, i.e., sheet metal, is not a suitable material for constructing a chemical vapor deposition chamber. For at least this reason, the Shibana et al. apparatus cannot reasonably

be said to anticipate the scrubber system of amended independent claim 26, and claims 2-11 that depend therefrom.

Similar to amended claim 26, amended independent claim 15 requires a first apparatus adapted for removing at least a portion of a non-toxic part of an exhaust gas by chemical vapor deposition. Again, the Shibani et al. apparatus is not adapted for chemical vapor deposition. In addition, amended claim 15 requires a second apparatus adapted for removing at least a portion of a toxic part from a gas. Shibani et al. are completely silent on any such apparatus. For at least these reasons, the Shibani et al. apparatus cannot reasonably be said to anticipate the scrubber system of amended independent claim 15, and claims 16-18 that depend therefrom.

The Examiner has rejected claims 1, 3-5, 7, 8, 10, 15-18 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 3,607,104 to Bickel et al., stating Bickel et al. disclose all the elements of these claims. Applicants respectfully disagree.

Bickel et al. disclose an apparatus for the intensification of liquid and/or gas phase contact. The apparatus includes a pair of chambers 22, 23 separated by a perforated partition wall 21. Each chamber includes a plurality of baffles 12 and is partially defined by a perforated gas diffusion plate 10 for diffusing an inert gas in order to cause the media in the two chambers to foam. During operation, media within each of the two chambers is caused to flow, resulting in a very fast mass transfer between the two media without mixing occurring through the perforated partition wall.

Similar to the assertions made above with respect to the Shibani et al. device, the Bickel et al. apparatus is not adapted for chemical vapor deposition. Therefore, the Bickel et al. apparatus cannot anticipate amended independent claims 26 and 15, and dependent claims 2-11 and 16-18 that depend therefrom. In addition, Bickel et al. do not disclose a second apparatus adapted for removing a portion of a toxic part of a gas, as required by amended independent claim 15. For this additional reason, the Bickel et al. device cannot anticipate independent claim 15 and claims 16-18 that depend therefrom.

Regarding the dependent claims, Bickel et al. do not disclose a baffle having a plurality of apertures as required by dependent claim 4. The perforated partition wall 21 is not a baffle that allows exhaust gas to flow therethrough, nor is the gas diffusion plate 10. Regarding dependent claims 10, 17, and 18, Bickel et al. are completely silent on a gas containing silicon, silane, and arsine, respectively. Regarding dependent claim 16, Bickel et al. are completely

silent on a substrate for receiving a film by chemical vapor deposition. For these additional reasons, Blickle cannot anticipate claims 4, 10, and 16-18.

In view of the foregoing, Applicants respectfully request that the Examiner withdraw the present anticipation rejection with respect to the rejected claims.

Rejections Under 35 U.S.C. § 103

The Examiner has rejected claim 2 under 35 U.S.C. § 103 as being obvious in view of the Shibana et al. patent, discussed above, and U.S. Patent No. 5,213,767 to Smith et al., stating Shibana et al. disclose all of the elements of claim 2 except at least one substrate made of quartz. The Examiner then states that Smith et al. disclose a container made of quartz and asserts it would have been obvious to a person having ordinary skill in the art to make the Shibana et al. baffles out of quartz. Applicants respectfully disagree.

As discussed above, the Shibana et al. apparatus is a pyrophoric gas neutralizing apparatus that mixes a pyrophoric gas with air in order to neutralize the gas. Shibana et al. state that the apparatus is made out of sheet metal, and tout the relatively low cost of the apparatus. (See col. 2, lines 9-36. Applicants assert that it would not be obvious to make the Shibana et al. baffles out of quartz for at least two reasons. First, the Shibana et al. apparatus is not a chemical vapor deposition device, and therefore does not require a specialty material such as quartz. Second, quartz is much more expensive than sheet metal. To make the Shibana et al. baffles out of quartz contradicts the motivation behind the Shibana et al. apparatus to provide an inexpensive solution to pyrophoric gas neutralization by mixing with air. Accordingly, Applicants assert that the Examiner is making the present rejection in hindsight of claim 2. Of course, this type of hindsight is improper in formulating obviousness-type rejections. Therefore, Applicants believe that the present rejection is improper.

The Examiner has rejected claims 6 and 9 under 35 U.S.C. § 103 as being obvious in view of the Shibana et al. and Blickle et al. patents, stating Shibana et al. disclose all of the elements of these claims except a plurality of baffles each having a plurality of apertures and removable baffles. The Examiner then states that Blickle et al. disclose apertured baffles and asserts it would have been obvious to a person having ordinary skill in the art to provide the Shibana et al. apparatus with apertured baffles and to make the baffles removable. Applicants respectfully disagree.

As discussed above, Blickle et al. do not disclose a plurality of apertured baffles. Blickle et al. disclose only a perforated partition plate and a perforated gas diffusion plate. Neither of these structures can fairly be said to be baffles. Therefore, any combination of the Shiban et al. and Blickle et al. patents would lack a plurality of apertured baffles as required by claim 6. Therefore, the present rejection of claim 6 is improper.

Regarding claim 9, Applicants assert that it would not be obvious to a person having ordinary skill in the art to make either the Shiban et al. or Blickle et al. baffles removable and reusable as required by claim 9. This is so because there simply is no reason to make the Shiban et al. or Blickle et al. baffles removable and reusable. The reason the substrates of the present invention are removable and reusable is because after a period of use, the substrates become coated with deposits from the chemical vapor deposition removal process. When these deposits reach a certain thickness, the substrates can be cleaned and placed back into the apparatus. In contrast, the Shiban et al. and Blickle et al. baffles do not build up any such deposits. The only reason to make them removable would be because of damage due to wear, but in this case they would not be reusable because they would be damaged. Accordingly, Applicants assert that the Examiner is making the present rejection in hindsight of claim 9. Again, this type of hindsight is improper in formulating obviousness-type rejections. Therefore, Applicants believe that the present rejection is improper.

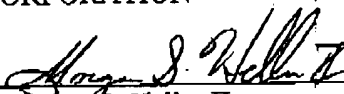
For at least the foregoing reasons, Applicants respectfully request that the Examiner withdraw the present obviousness-type rejections of claims 2, 6, and 9.

CONCLUSION

In view of the foregoing, Applicants submit that claims 2-10, 15-18, and 26, as amended, are now in condition for allowance. Therefore, prompt issuance of a Notice of Allowance is respectfully solicited. If any issues remain, the Examiner is encouraged to call the undersigned attorney at the number listed below.

Respectfully submitted,

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Attachment

Proposed amendment to FIGS. 2 and 3

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